

IN THE ABSTRACT OF THE DISCLOSURE:

Please replace the abstract with the following new abstract:

--Abstract

A method of measuring a variation in dimensions and a deviation in position of a resistance detector element and a MR element that may become error factors in an in-process measuring method for measuring the height of the MR element, wherein the resistance of the resistance detector element is measured during a lapping process and converted to the height of the MR element. A high numerical aperture optical system employing DUV light having a wavelength of 200 nm is combined with a stage system with an effective straightness of the order of 10 nm, and, further, a high-precision automatic focusing system which can match both DUV light and a high numerical aperture application is used together with the above-mentioned combination. By adopting this configuration, measurement of an image with high precision, high stability, and high resolution can be implemented, and measurement of MR elements covered with end face protection films and resistance detector elements can be performed to determine their dimensions and alignment error with a high degree of accuracy.--